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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,782	07/15/2003	Dirk J. Sundt	501085.02	1121

7590 01/05/2007
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EXAMINER

HU, SHOUXIANG

ART UNIT	PAPER NUMBER
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2811

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/620,782

Applicant(s)

SUNDT ET AL.

Examiner

Shouxiang Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25,26,28,33-36 and 42-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25,26,28,33-36 and 42-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 25, 26, 28, 33-36 and 42-44 are objected to because of the following informalities and/or defects:

Claim 25 recites the term of "a second opposite side of the silicon nitride layer"; but it appears to be confusing, as there is no corresponding term of "a first opposite side of the silicon nitride layer" in the claim.

Claim 25 recites the subject matter of "a mask layer formed over the silicon nitride layer and having an opening therethrough", but fails to clarify which of the two layers the opening recited here is formed through, and/or what is its positional relationship with the opening formed through the recited silicon nitride layer.

In claim 25, the term of "a first side adjacent" should read as: --a first side of the silicon nitride layer adjacent to--.

Claim 33 recites the terms of dimensions along the first side and the second side. But, it is indefinite as the claim fails to clarify what are the directions of the recited first and second sides, along which the recited dimensions are measured, given that the side directions of a layer are normally referred to directions that are perpendicular to that layer.

Claim 42 recites the term of "a second opposite side of the layer"; but it appears to be confusing, as there is no corresponding term of "a first opposite side of the layer" in the claim.

Appropriate correction is required.

Allowable Subject Matter

2. The indicated allowability of claim 42-44 is withdrawn in view of the newly discovered reference(s) to Lai. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 25, 26, 28, 33-36 and 42-44, as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 102(b) as being anticipated by Lai (US 6,103,619).

Lai discloses a semiconductor structure (Fig. 12), comprising:

a trench formed in a substrate (62 and 58, such lamination is naturally readable as a substrate at least to the layers such as 64 and 66, which are formed overlying such a substrate);

a layer of a silicon nitride (64) formed over the substrate, having an opening formed therethrough over the trench, the opening having a first dimension on a first side of the silicon nitride layer adjacent to the trench and a second dimension on a second side of the silicon nitride layer opposite to the first side; and,

a mask layer (a lower portion of 66, silicon oxide) formed over the silicon nitride layer, the mask layer having an opening therethrough with a dimension less than the second dimension of the opening of the silicon nitride layer (64),

wherein the opening of the silicon nitride (64) is inherently tapered and/or faceted with the second dimension naturally larger than the first dimension, as it is formed through wet etching (see Fig. 10, also see col. 4, lines 9-21), in a manner substantially same as that in the instant invention, given that the wet etching is naturally isotropic, which naturally causes the upper portion of the silicon nitride layer to be removed laterally more than the lower portion of the silicon layer as the wet etching is started from the upper portion.

Regarding claim 34, the materials of the substrate (at least the layer 62 therein, an oxide) and the silicon nitride layer (64) can naturally be selectively etched with respect to one another.

Response to Arguments

5. Applicant's arguments with respect to the above rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-

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1654. The examiner can normally be reached on Monday through Friday, 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard T. Elms can be reached on 571-272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SH
December 14, 2006



SHOUXIANG HU
PRIMARY EXAMINER